DOCUMENT RESUME

ED 337 112 HE 024 953

AUTHOR Ewell, Peter T.; Jones, Dennis P.
TITLE Assessing and Reporting Student Progress: a Response to the "New Accountability."
INSTITUTION State Higher Education Executive Officers Association.
SPONS AGENCY National Center for Education Statistics (ED), Washington, DC.
PUB DATE Jul 91
NOTE 58p.
AVAILABLE FROM State Higher Education Executive Officers, 707 Seventeenth Street, Suite 2700, Denver, CO 80202-3427.
PUB TYPE Information Analyses (070)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Academic Achievement; Academic Persistence; *Accountability; *Educational Assessment; Educational Policy; Higher Education; Information Technology; *Politics of Education; Stopouts; *Student Evaluation; Transfer Students; *User Needs (Information)

ABSTRACT

This paper reviews current approaches for tracking student progress in postsecondary education, focusing on the context of emerging policy and information needs at the state, national and institutional levels and on the capabilities and limits of currently available information technology. The paper consists of six main sections. First the growing requirements for consistent data reporting on student progress are examined in the light of some wider national policy trends. Second, the methodological requirements for generating meaningful information about student persistence and degree-completion and the current capacities of states and institutions to generate such statistics are discussed. The third section contains a comprehensive review of persisting issues, including such topics as who should be included in reporting, and how to handle such enrollment phenomena as "stop-outs" and inter-institutional transfers. Section four addresses these issues through a set of "minimal" recommendations for data collection and reporting. Two concluding sections examine the implications of these ideas for future developments including possible uses (and misuses) of the resulting data, and how results might potentially be linked with available state and national "levers for change." Seven references. (JB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED337112

Assessing and Reporting Student Progress: A Response to the "New Accountability"

Peter T. Ewell
Dennis P. Jones

National Center for Higher Education Management Systems

July 1991

Support for the preparation of this paper was provided by the National Center for Education Statistics, U.S. Department of Education, through the SHEEO/NCES Communication Network

No official endorsement of the authors' position should be inferred.

SHEEO

State Higher Education Executive Officers
707 Seventeenth Street, Suite 2700
Denver, Colorado 80202-3427
303-299-3686

HE 024 953

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
SHEEO
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

BEST COPY AVAILABLE

TABLE OF CONTENTS

		Page
	Foreword	iv
	Overview	1
I.	Introduction	2
II.	Technical Requirements and Current Capacity to Respond	8
III.	Persistent Issues in Reporting Student Progress	12
IV.	Some Recommendations for a Basic Reporting System	30
V.	Uses of the Resulting Data	45
VI.	What's Needed Next?	50
	References	52

FOREWORD

In a small and wise book published in 1971, Alice M. Rivlin — no stranger to public policies for higher education — provides two cautions for the development and use of performance indicators: "First, single measures of performance should be avoided. . . . Second, performance measures should reflect the difficulty of the problem."[1] Simplistic, single measures reflect only simple, singular things. Sound and sobering advice as we in higher education now scurry to comply with a new federal law requiring one "graduation rate" statistic for each of the more than 3,000 higher education institutions and many smaller postsecondary providers across the nation.

We could, presumably, observe Rivlin's precautions and disregard the new law, were it not for the severe financial consequences of non-compliance. We could disregard the increasingly frequent calls for performance and "outcomes" measures in higher education, were it not for the considerable political weight of an "education president" and 50 state governors, raising our expectations for education in a nearly unanimous voice. We could disregard this challenge if we truly lacked the intellectual and technical resources to design and provide meaningful performance measures, or if we did not believe in the potential of good analysis and meaningful indicators of progress to improve education. Rivlin concludes her small book on a positive note with a chapter that explores the meaning and the demand for greater "accountability" — a prophetic call in 1971, a proverbial cry in 1991. "Put more simply, to do better, we must have a way of distinguishing better from worse."[2]

Public Law 101-542, The Student Right-to-Know and Campus Security Act of 1990, is all about knowing better from worse. Put simply, one section of this law requires regular public disclosure of a "graduation rate" by all postsecondary institutions, defined as the proportion of full-time entering students who complete a degree or certificate program within 150% of "normal time." A second major section requires more detailed reporting of graduation rates by institutions that provide financial assistance to students contingent upon participation in intercollegiate athletics. The third major component requires disclosure and reporting of campus-based crimes and public safety policies. The thrust and the potential effects of the law rest upon a few, seemingly simple statistics on higher education — one to inform the consumers, one to make sure that education is reasonably provided, and one to protect those who are engaged in that education.

This is the context and the challenge which Peter T. Ewell and Dennis P. Jones address in this paper, and which they refer to in shorthand as "Student Right-to-Know." They focus on developing a reasonable approach and methodology for deriving the first of these statistics, the general graduation rate that provides some useful consumer information to students and the public. Their analysis and approach also has direct bearing on the second set of statistics, the comparative graduation rates for particular groups of students. And in a larger, less direct sense their argument applies as well to the reporting of crime and safety statistics, and to the demands for "new accountability" which these statistics are intended to address.

---

[1]Alice M. Rivlin, Systematic Thinking for Social Action (Washington, D.C.: The Brookings Institution, 1971), pp. 142-3.

[2]Rivlin, p. 144.

Ewell and Jones demonstrate that these seemingly simple statistics are beguilingly complex. Their paper is, admittedly, detailed and technical in nature. It is not, however, narrow in scope, and its implications for institutional leadership, state policy and the national agenda for improving education are substantial. Walking us step-by-step through the dilemmas and necessary accommodations of constructing meaningful and useful performance information on higher education, this is surely an example of what Rivlin had in mind as "systematic thinking for social action."

This paper provides those truly interested in the design and use of better information on higher education with an outline of definitions and procedures for analyzing and reporting on student progression through postsecondary education. The common template they propose goes far beyond what might be necessary for minimal, formalistic compliance with the Student Right-to-Know Act. But as Ewell and Jones imply, minimal compliance is not likely to meet the demands of "new accountability," and minimal compliance will not produce meaningful information to support real change. We need to debate and reach agreement on the details, but such a common template can go far to meet the information needs of institutional planners and leaders, state policy makers and the federal government, as well as students and the general public. Such information can tell us more about the changing nature of our student bodies, about our diversity and richness as well as the barriers and problems of student progression. This information, when applied in the design and implementation of policies and institutional operations, can help much more than quick statistics to improve the performance of education, and the outcomes of that education for students and society.

Charles S. Lenth
Denver, Colorado

Assessing and Reporting Student Progress:
a Response to the "New Accountability"

Peter T. Ewell
Dennis P. Jones
National Center for Higher Education
Management Systems

Overview

This paper reviews current approaches for tracking student progress in postsecondary education, focusing on the context of emerging policy and information needs at the state, national and institutional levels and on the capabilities and limits of currently available information technology. The stimulus is a growing need for timely, consistent information about student persistence and degree-completion throughout postsecondary education. Our central argument is that a consistent national approach can be developed for compiling and reporting such information, within the limits of present technology, that can serve the needs of all policy sectors.

The paper consists of six main sections. First, we examine the growing requirement for consistent data reporting on student progress in light of some wider national policy trends. Second, we briefly address the methodological requirements for generating meaningful information about student persistence and degree-completion, and the current capacities of states and institutions to generate such statistics. The third section contains a comprehensive discussion of persisting issues in this area, including such topics as who should be included in reporting, and how such enrollment phenomena as "stop-out," variations in credit loads carried, and inter-institutional transfer should be handled. In section four, we address these issues through a set of "minimal" recommendations for data collection and reporting. In two concluding sections, we discuss the implications of these ideas for future development — including possible uses (and misuses) of the resulting data, and how results might potentially be linked with available state and national "levers for change."

Our intention throughout is less to provide a "definitive" treatment of the informational issues involved in reporting student progress than to stimulate informed discussion among the various parties-at-interest. Our extensive experience in designing and implementing longitudinal data bases at both the state and institutional levels convinces us that there are no "right" answers in this arena; but at the same time, it convinces us that there are many ways of going wrong. We hope this paper proves useful in avoiding some of the latter.

I. Introduction

The need for information about student progress in higher education is becoming manifest at the national, state and institutional levels. At the federal level, immediate concerns are centered on effectively implementing "Student Right-to-Know" legislation, passed by Congress in the 1990 session, and on the need to develop consistent national indicators of student progress to track the achievement of National Education Goals, as outlined by the President and the nation's governors. At the state level, concerns are centered on the role of such information in assessment and accountability reporting, in system planning (particularly in system articulation), and in ensuring that state access and work-force needs are being effectively addressed. At the institutional level, longitudinal tracking information is critical for guiding effective retention and enrollment management, for evaluating the effectiveness of placement, remediation and academic prerequisite policies, as a critical component of locally-designed student assessment programs, and as an increasingly important component of regional accreditation. We suggest that these information needs must be seen as part of a larger policy agenda — what we have come to call "the new accountability." At the same time, we suggest that appropriate informational requirements should be determined in the light of differing users and uses of the resulting data. Together, these contextual factors suggest the shape of an appropriate higher education response.

Information Requirements of the New Accountability

New kinds of information are required, we believe, because the fundamental basis of public accountability in postsecondary education has shifted. The case for a "new accountability" is rooted in changing perceptions about the public role of higher education: from a provided service to a strategic investment (Ewell 1990, SHEEO 1989). This shift contains a number of identifiable themes, including:

- increased emphasis on explicit linkages between higher education and achieving wider societal goals of renewed economic development and global competitiveness,
- altering the focus of accountability for higher education from equitable access and efficient operation toward "return on investment," and
- an emerging emphasis on "consumer protection" in higher education through publicly-available information on student outcomes and comparative institutional performance.

Collectively, these themes imply the need for types of information in addition to those which have traditionally formed the substance of higher education's accountability. Particularly needed in this context are:

- information about longitudinal student enrollment and performance — including persistence rates, graduation rates and time to completion — broken down by a variety of student characteristics (for example, ethnicity, gender, intended program of study, scholarship support, financial aid, etc.);
- information about what happens to graduates — including job placement and performance, and further participation and performance in postsecondary education — again broken down by relevant student characteristics; and
- information about what graduates know and can do — including domains of knowledge/content (both in general and in the student's major field), basic and "college level" skills such as communications, quantitative skills, critical thinking and

problem-solving skills, and a variety of attitudes, values, and such "habits of mind" as multi-cultural awareness or community service/citizenship.

While all three of these types of information will ultimately be required to satisfy the demands of the "new accountability", the first is both the most straightforward and the most immediately in demand. At the same time, the technical complexities involved in generating information on longitudinal performance are significantly greater than those involved in any previous type of reporting in higher education. The result is a dilemma: longitudinal performance statistics are difficult to generate; at the same time, they appear so transparent and simple that it is hard to explain to those outside postsecondary education exactly why they are difficult to generate. Given this dilemma, unusual care is required in providing the interpretive caveats that must be applied to any given performance statistic, while at the same time not communicating an obstructive attitude.

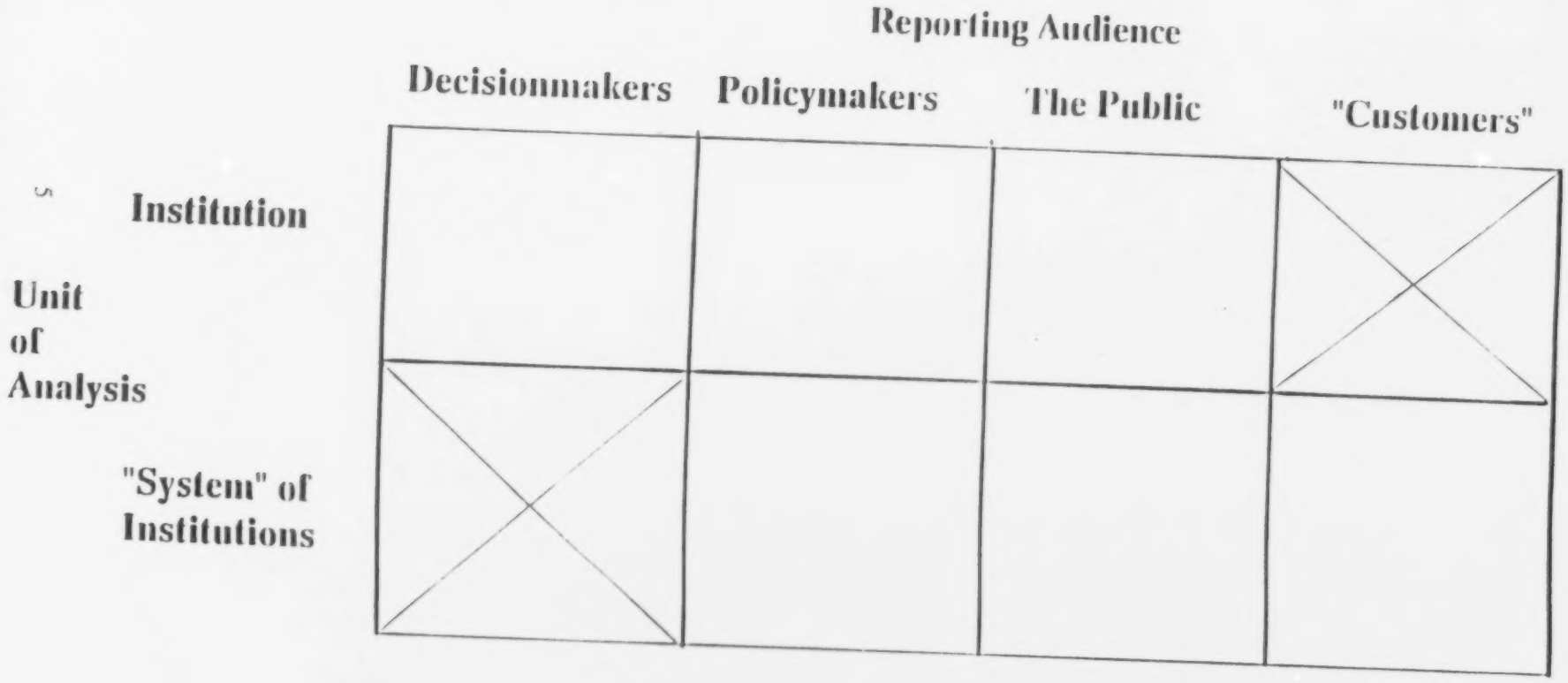
Differing Informational Needs and Purposes

Appropriate informational requirements vary across constituencies with different needs. Information about student progress is no exception. In developing policy at the state and federal levels, it is important to recognize legitimate differences in informational requirements and to ensure that these requirements are developed as consistently as possible. Too often, when this is not the case, preventable differences in reporting methodologies between state and federal authorities (as well as those presented by a number of external accreditation bodies) have resulted in the need for institutions to engage in massive and expensive recompilation of base datasets in order to meet the needs of multiple reporting audiences.

Chart 1 presents a simple taxonomy of needs and purposes for information about student progress. Units of Analysis refer to the primary levels of aggregation at which longitudinal performance statistics are typically calculated. They include the individual institution, statewide or system-level reporting and aggregate national reporting. Reporting Audience refers to the

Chart 1

DIFFERING NEEDS AND PURPOSES FOR INFORMATION ABOUT STUDENT SUCCESS



information's prime constituency. These include higher education planners and decision makers at the state and institutional levels, public policy makers including legislators and lay board members, postsecondary education's direct "customers" such as potential students and their parents and the public at large.

Intersections among these two dimensions yield quite different sets of informational requirements. State-level decision makers within higher education, for example, typically require information on system-wide rates of inter-institutional transfer and articulation for purposes of system-wide planning, and need information about overall degree-production rates for purposes of regular accountability reporting. Potential students, in contrast, require information about their own chances of persisting and completing a degree at a particular institution. The former requirements have helped to determine the content of many statewide "unit record" reporting systems, while the latter is the primary focus of "Student Right-to-Know" legislation. While each demands a different type of reporting statistic, both should be derived from a consistent set of base longitudinal data. A first implication, therefore, is that such requirements not be developed in isolation. Any national approach to persistence and degree-completion reporting should be developed consistently with the needs of both state and institutional decision makers.

A second implication is more subtle. Experience with past accountability reporting has amply demonstrated that state and national requirements to a large extent shape institutional capacity to produce locally useful management information. The current design of most student records and financial accounting systems in higher education, for example, reflects not only internal requirements for management information but also the need to supply standard data for both federal reporting and for state enrollment reporting. We expect that future requirements for longitudinal data reporting will have similar effects on the content and structure of institutional data systems. As a result, anticipated national reporting should be carefully designed to induce institutions to develop longitudinal data bases that are consistent with current "best practice" in student tracking. Development of such data bases, we have found, can be both expensive and

time-consuming; despite their local benefits, institutions are reluctant to embark upon them in the absence of an external stimulus to do so.

Experiences of the 50 or more institutions participating in the LONESTAR student tracking consortium in Texas are typical in this regard (Adelman, Ewell and Grable 1989). Most joined the consortium because they needed a method to respond to newly-enacted state reporting requirements on the effectiveness of remedial instruction, and the design of the LONESTAR system largely reflected these reporting requirements. Now that longitudinal data bases are in place, however, institutions are applying the resulting information effectively to improve local retention and student success programs. This "spillover" occurred largely because the data system was designed from the outset to meet both external reporting and internal management needs.

Three Principles for Constructing an Appropriate Response

Putting these elements of context together, we suggest that an appropriate national approach for reporting student progress should embody the following principles:

- The resulting data system must be useful at multiple levels. Consistent with this principle, longitudinal data bases in structure and content should be able to meet the needs of individual consumers, institutional planning and accountability, statewide accountability and higher education system planning and anticipated federal reporting. Particular attention should be paid to the manner in which proposed reporting standards will positively affect overall institutional capacity to generate useful management information.
- The resulting data system must be sufficiently flexible that it can operate effectively in quite different environments. Institutions vary significantly with respect to academic policies, curricula and academic calendars. State systems as well vary considerably in their structures, and consequently in the needs that longitudinal data must meet. Each

of these can have an impact on the design of appropriate longitudinal data systems. At the same time, both institutions and states vary considerably with respect to computing capacity and in the structure and capabilities of their student records systems. Proposed approaches should be designed to allow most institutions to generate the needed statistics within their current academic practices and technical environments.

- The resulting data system must be sufficiently simple that all types of postsecondary institutions can minimally and accurately respond. As demonstrated by widely varying institutional responses to recently implemented "track record disclosure" reporting for federally-funded vocational/technical programs (Hanson 1990), a major danger involved in complex reporting requirements is distorted compliance. Faced with the pressure to report something, all institutions can be expected to come up with a number; but the approaches used will be so inconsistent that they are useless for both accountability and for guiding effective decisionmaking. Proposed requirements should be designed so that all can respond accurately — regardless of institutional size, type and control.

All recommendations advanced in subsequent sections of this paper are informed by these principles, and we strongly believe that any workable national approach to reporting student progress must be consistent with them as well.

II. Technical Requirements and Current Capacity to Respond

Providing meaningful information on persistence and degree completion requires a substantially different approach to student record-keeping than does traditional enrollment reporting. It also requires consistent definitions for base data elements that have not previously been used in standard reporting. Institutional and state capacities to generate such statistics at present vary considerably. While current capacities to respond should not fully dictate what is needed, realistic planning should be informed by the kinds of student data states and institutions now maintain and their ability to manipulate these data.

The standard approach to generating statistics on persistence and degree completion is use of a cohort methodology (Wing 1974; Ewell, Parker and Jones 1988). The unit of analysis for this approach is an identified "cohort" of entering students — for example, all students beginning their studies at Institution X in the Fall of 1991. Once identified, students remain a member of a given starting cohort regardless of their subsequent pattern of enrollment — including changes in load carried, degree objective, or interrupted attendance resulting in "stop-out" and re-admission. Statistics on student progress are generally calculated on the basis of the total number in the starting cohort. Commonly-produced indicators in both state-level and institutional reporting are: (a) proportion of the cohort persisting into the second year of enrollment, (b) proportion of the cohort persisting two or more years, and (c) proportion of the cohort completing a baccalaureate degree within five years of entry or an associate degree within three years of entry.

In order to implement cohort-based tracking, several conditions are required:

- The ability to regularly extract relevant data elements from the existing student record system and "freeze" them at their current values. Most extant institutional records systems are "live" — that is, when the status of a current data element changes, the new value replaces the old. This poses particular problems in cohort reporting because, for example, it may not be possible to determine a student's actual first term of academic history if he or she has been readmitted. While most student records systems have the ability to archive files, not all institutions are familiar with or use this capability. At the same time, most records systems are technically limited in their ability to extract relevant data elements for later analysis.
- The ability to merge relevant data from multiple academic periods into a single file. The majority of current student records systems — both state and institutional — are semester- or term-oriented — that is, they maintain information about all students enrolled at the institution during a specific term. Cohort reporting, in contrast, requires

the ability to relate information from one term file to parallel information in the next, across as much as a seven-year period. Common difficulties here include changes in student recordkeeping procedures across terms (or in the student records system itself), the lack of consistent student identification numbers which are needed to match records across multiple terms, and the lack of the required technical tools for easily moving data from file to file.

- The ability to quickly calculate relevant statistics on student progress. In contrast to cross-sectional descriptive information, most data elements in a longitudinal data system do not mean much on their own. Relevant reporting statistics instead must be derived from often complex combinations of base data elements; reporting a completion rate for a given student population, for instance, requires knowledge of the number of degree-seeking students starting in a given term, the number completing programs in each subsequent term up to and including the current term, and a set of descriptors for isolating the study population. Most student records systems are designed for information retrieval, not statistical calculation. As a result, additional programming is generally required to produce longitudinal performance statistics; indeed, one standard practice is to use a commercial statistical software package rather than the existing student records system to generate such statistics, once the data have been extracted from base records.

To meet these requirements, many options are available. Some institutions, particularly large public universities, actively maintain all past term records in a form accessible for analysis; longitudinal reporting is generally the responsibility of an institutional research office with in-house programming staff available to design and execute the required data manipulations. A growing number of institutions (particularly two-year colleges) develop a free-standing set of longitudinal data files containing information extracted regularly from historical student records; once they are designed, updating and maintaining student tracking systems of this kind is

comparatively straightforward. Most institutions, however, do not currently possess automated capabilities like these. Instead, they must generate such statistics by complex special programming within the existing student records system, or by manual aggregation of data across terms. At present, we estimate that more than two-thirds of public colleges and universities and almost 80% of private institutions fall into this category. This does not mean that they cannot meet the requirements of such mandates as "Student Right-to-Know." But it does imply that doing so may entail a substantial additional cost.

State capacities to conduct longitudinal studies and to consistently report graduation rates also vary considerably. Currently, about half the states have the capability in place to do so, though six of the 25 do not currently use this capability (SHEEO 1991). An additional 11 states plan to develop a longitudinal reporting capacity within the next few years. Of this total of 39 states, almost two-thirds base their tracking on a statewide unit record system, while the balance require regular institutional reporting using common data procedures and definitions. While this picture overall suggests substantial capability, state reporting systems are often limited in both institutional and student coverage. Some, for example, include only two-year or only four-year public colleges and universities, and virtually none include private and proprietary institutions. More importantly, they employ a wide variety of cohort inclusion criteria. Only 13, for example, include all credit students, while the majority track full-time degree-seeking students only. While these cohort inclusion criteria are sufficient to meet the reporting requirements of "Student Right-to-Know," they are limited in their ability to support comprehensive statewide planning studies.

Despite limitations in current capacity, the potential state role in implementing a comprehensive, effective approach to student performance reporting is considerable. Even in the absence of a statewide unit-record data system, states can facilitate an appropriate institutional response by providing technical assistance and by coordinating the development of common definitions. The availability of a unit-record system enhances these possibilities considerably, as states have the potential to assume a major responsibility for reporting persistence and degree

completion — just as they in many cases now coordinate or directly provide centralized information for federal reporting. At the same time, state data bases may provide the only efficient method for tracking inter-institutional transfer or placement in employment. Applications of unit record information such as these have demonstrated that substantial efficiencies in data reporting can be achieved through state-level coordination and processing — particularly for small institutions with limited technical capacity. As a result, about half the states expect to play a role in "Student Right-to-Know" reporting, and an additional 11 would like to develop the capability to do so (SHEEO 1991).

III. Persistent Issues in Reporting Student Progress

Cohort methodologies have been repeatedly employed in research studies aimed at determining the reasons for student non-persistence and success. Less extensively, they have been used to generate statistics on retention and degree completion for purposes of public reporting — particularly for identified groups such as minorities and student athletes. Whatever the purpose, however, a number of definitional issues hinder the ability to carry out such studies systematically. While the "Student Right-to-Know" legislation suggests some procedural resolutions to these issues at the federal level, these are far from definitive. A comprehensive approach useful at the institutional, state and national levels must recognize the complexity of these issues and suggest appropriate definitional resolutions.

This section of the paper is intended to present these issues systematically, examining the merits and drawbacks of alternative approaches. A subsequent section presents a set of procedural recommendations for addressing these issues.

Definitional Consistency

Consistent definitions are required for base data elements used in reporting, for procedures used in constructing cohorts, and for calculating performance statistics derived from base data.

While the first and third are familiar issues in public reporting, the second is more complex and has not previously been encountered in public reporting.

1. Data Issues. Base data requirements for longitudinal student tracking are of two kinds. First, student descriptors are required to identify populations of interest; such variables will usually be used to break down overall performance results by group — most commonly, for example, by gender or by ethnic population. Descriptors of this kind are generally of three kinds (Ewell, Parker and Jones 1988):

- Demographic descriptors cover various student background characteristics that describe recognizable population groups; among the most common are gender, ethnicity, date of birth, geographic origin and physical disability.
- Educational background descriptors provide information on educational aptitude and prior attainment; examples include high school attended, high school performance, aptitude and basic skill test scores, and previous postsecondary educational experience and attainment.
- Initial enrollment status descriptors provide information about a given student's status when first entering a college or university; the most common include first-time freshman vs. transfer student, average credit load carried (or "full-time/part-time"), time of attendance (for example, "day/evening"), special vs. regular admissions status and initial major or program of study.

Many of these descriptors — particularly in the first category, are already defined at the national level. Many, however, are not.

A second data requirement for longitudinal tracking is for performance and outcome data. In standard cohort methodologies, typical data elements include credits enrolled for and completed, academic performance, program/major changes, and program completion within a given time period. Generally, information is collected for each student separately for each term in the tracking period, and is later aggregated across terms to yield overall performance statistics for various types of students. Such methods have served individual institutions well

in calculating meaningful information on student progress within their own contexts. When aggregating across institutions and states, however, a number of additional definitional problems arise. Among them are:

- Definitions of "persistence." Under most cohort approaches, students are held to be actively enrolled if they register for at least one credit during the term of record. Some institutions, however, continue to carry students as "enrolled" in a given term when they are not taking classes — often in connection with a planned year off or abroad. For national persistence reporting, such inconsistencies will need to be resolved, though for the most part, current definitions for counting "enrolled" students in fall enrollment reports for the federal Integrated Postsecondary Education Data System (IPEDS) suggest a point of resolution.
- Variable academic calendars (and resulting term structures). As noted above, standard cohort methodology requires term-to-term tracking of student progress. Nationally, colleges and universities use a variety of academic calendars that differ with respect to the number of terms in an academic year (semester, trimester and quarter), with respect to start and end dates for each term, and with regard to how summer and "intersessions" are handled. Resolving this difficulty virtually requires annual rather than term-oriented reporting of persistence, but this resolution raises additional issues: for example, is a student "persisting" if he or she enrolls for only one term in a given academic year, or must enrollment take place in all regular terms?
- Inclusion of college-level courses only in calculating persistence. Many students arrive at college deficient in basic skills, even though their objective is to earn a degree. Through placement testing, such deficiencies may be detected and students required to remediate deficiencies through non-collegiate coursework. Should enrolling for such coursework be considered in determining "persistence" or should only college-level work be reported?

In sum, in order to provide meaningful longitudinal information and minimal compliance with requirements such as "Student Right-to-Know", standard definitions will be required for a number of new data elements not now reported to the federal government or, in a standard way, to any other multi-institutional agency.

2. Cohort Construction and Inclusion. Beyond base data definitions, consistent longitudinal information requires procedures for how student cohorts are defined and who is to be included in them. This is an issue which has not be previously faced in standard reporting and which requires particular care. As athletic persistence reporting has shown, even small variations in cohort construction and inclusion criteria can yield enormous differences in calculated degree-completion statistics; similar lack of standardization has frustrated most attempts to compare the results of retention research studies nationally.

In order to arrive at meaningfully comparable results, we believe that at minimum the following definitional questions must be addressed:

- What is an appropriate start date? Standard cohort methodologies use two quite different methods for determining the "first term of enrollment" for a given student. One is behavioral: students are included in the cohort that corresponds to the term of their first credit enrollment, regardless of load carried or degree intention. The second is related to matriculation: students are included in the cohort that corresponds to the term in which they first matriculated as degree-seeking students, regardless of prior attendance at the institution. Both are valid definitions of "start date" for different purposes. While the language of the "Student Right-to-Know" legislation appears to require a cohort definition based on matriculation ("full-time degree-seeking students"), procedural implications remain to be clarified. Behavioral cohort definition has the advantage of conceptual clarity, but can result in anomalies of classification: a student who registers for one personal interest class at a community college and two years later begins a degree program at the same institution, for instance, is placed with the cohort that

corresponds to his or her first class. But a matriculation-based cohort definition has equivalent drawbacks. Students may declare a given degree well after they have begun earning credit toward it, thus gaining a "head start" on their counterparts who declared a degree intention on admission. At the same time, students may earn degrees in sequence — particularly in articulated programs; do they become baccalaureate degree-seekers on entry, or only after they have completed an associate degree?

- What is the appropriate unit of analysis for cohort construction? Most cohort methodologies take the individual institution as the unit of analysis. Students are included in a given starting cohort on the basis of when they enter the institution, not on the basis of when then began their postsecondary studies. Nationally-based cohort studies such as NCES' National Longitudinal Study and the High School and Beyond Study use a "systemwide" unit of analysis: students remain in a given starting cohort regardless of how many postsecondary institutions they attend. State systems of higher education may also occasionally construct system-level cohorts that track students from the institution at which they began their studies to the institution at which they earned a degree. Such studies are particularly useful to assess transfer performance in articulated two-year and four-year public systems. Again, there is no right answer in developing a consistent national reporting methodology. The obvious intent of such reporting requirements as "Student Right-to-Know" is to provide institution-level statistics. But this must be accomplished in a manner that reflects the probability of a given student's attending multiple institutions, and persistence and degree-completion statistics must be calculated in a manner that does not artificially truncate the time required to earn a degree for students who attend more than one institution.
- What is the appropriate way to handle prior credit earned? This question is closely related to the one above. Increasing numbers of students enter colleges and universities as transfer students, and begin with advanced standing at the receiving institution. Their

progress cannot, therefore, be legitimately compared directly to that of first-time freshmen. Most existing statewide persistence and degree-completion reporting obviates this issue by calculating results for first-time freshmen only. If transfer students are to be included, however, two options are generally followed. As above, a first alternative is behavioral: transfer students are placed in the cohort that corresponds to their first actual term of enrollment at the institution, are identified as transfers, and their total number of transfer hours recorded; this procedure allows actual persistence rates to be calculated for transfers, but it may distort overall time-to-completion statistics if transfers are not separated analytically from first-time freshmen. Alternatively, transfer students may be placed with the cohort that corresponds to their class standing on admission; this procedure results in reasonable "bottom line" statistics when all students are aggregated, but significantly distorts what transfer students are actually doing. Requirements such as "Student Right-to-Know" suggest a behavioral approach to tracking transfers, but also appear to require separate reporting for first-time freshmen.

Taken together, issues of definitional consistency will probably prove the most challenging issues for standard reporting. Once a coherent approach is developed, the answers to many additional issues will also be partially determined.

Student Patterns of Attendance

The primary reason why issues of cohort definition are so important is that students are increasingly interacting with postsecondary institutions in a "non-traditional" fashion. So long as an expected four-year pattern of full-time, continuous attendance is assumed, most of the problems associated with measuring persistence disappear; indeed, this is a major reason why many institutions and states have confined themselves to tracking full-time, first-time freshmen only. But this is a highly unreasonable assumption. Once it is relaxed, it is apparent that there

are many reasons why students can fail to complete degrees within an "expected" time period — not all of which are within the institution's purview or control.

In general, issues related to student patterns of attendance are of two types. The first has to do with enrollment behavior at a single institution — whether a student chooses to attend full-time, to stop-out, or whether he or she experiences academic difficulty. The second has to do with the increasingly frequent practice of attending more than one institution.

1. Varying Enrollment Behaviors. Public disclosure and reporting requirements such as those contained in the "Student Right-to-Know" legislation assume that statistics on student persistence and degree-completion can legitimately be used for comparing institutional performance. But many factors are responsible for obtained differences among institutions on such measures, not all of which are under an institution's control. A key problem, therefore, is to distinguish among those outcomes resulting from actual differences in institutional performance and those that are a natural consequence of serving a particular student body.

The language of the "Student Right-to-Know" legislation, for example, bases graduation rates on the proportion of entering students who "complete degrees within 150% of the normally allotted time period." Those who fail to complete within this time period, however, may do so for many different reasons:

- They drop out voluntarily and in good academic standing. Students who terminate their enrollment at a given college or university are normally seen as institutional failures; "retention" in this sense is viewed as almost exclusively positive. But students can withdraw voluntarily under two quite different conditions — having met their personal objectives, and having not met those objectives. Many students enrolling at two-year colleges, for example, do so largely for reasons of obtaining needed job skills to obtain or to upgrade employment. If these objectives can be fully met without earning a degree, the degree itself is of little importance. Similarly, as many as two-thirds of

community college transfer students who will subsequently enroll in a four-year college in pursuit of a baccalaureate do so without having previously completed an associate degree. In neither of these cases can withdrawal be seen as institutional failure. Substantial experience has demonstrated that it is not safe to assume that such students will be classified as "non-degree" in student registration systems and subsequently not included in standard cohort definitions. For a variety of programmatic reasons, for instance, many such students are present in the ranks of community college "degree-seekers."

- They fail academically. Most studies indicate that a relatively small proportion of students who do not continue their studies at a given college fail outright. Certainly, academic difficulty is a primary reason for early voluntary withdrawal, but it is far from the only reason. From the standpoint of institutional performance, moreover, academic failure rates are difficult statistics to interpret: does a higher-than-average failure rate connote an institution that does not serve its customers well, or an institution with rigorous academic standards? Regardless of the answer to this question, separately reporting the proportion of students who fail to complete degrees for reasons of academic performance is clearly needed if a major intent is to provide useful information for guiding consumer choice.
- They attend part-time. Obviously, students may take long times to complete degrees if they do not carry full loads. Reporting requirements such as "Student Right-to-Know" take this into account by calling only for the calculation of persistence and degree-completion rates for full-time degree-seeking students. But experience has shown that students may significantly vary their credit loads from term to term over time. In a recent study of two-year degree completion in Indiana, for example, only 26% degree-seeking starters maintained full-time loads throughout all regular terms of the tracking period. Equally obviously, the number of credits carried is a student choice; it

is a characteristic of the student constituency served far more than it is a factor that signifies institutional performance. As a result, degree-completion reporting should allow clear identification of the extent to which low completion percentages within a given fixed time period are a direct consequence of legitimate student enrollment choices.

- They "stop in" and "stop out." Students may also voluntarily interrupt their enrollment for several terms at a time, even though they carry full-time loads for the terms that they do attend. The consequences for the time required to complete a degree are identical to those associated with part-time attendance and, like part-time attendance, are more descriptive of the clientele served than of the institution's performance. Moreover, such students are very likely to begin their studies as full-time degree-seekers, and thus be included in an initial tracking cohort. As above, additional information is needed to determine the rate of interrupted enrollment present at any institution in order to judge fairly time-to-completion within a fixed time period as a useful piece of consumer information.
- They cannot enroll for the proper required courses. Increasingly long times typical for completing baccalaureate curricula are also partly the result of escalating requirements. Many professional baccalaureate programs in fields such as engineering, architecture and education, for example, demand well in excess of the 120 semester credit hours typically required to earn a baccalaureate degree. At the same time, students may complete more than the number of hours necessary to graduate because they are blocked from registering in key courses needed in their majors or to complete the general education portion of their degrees. This is an increasingly salient problem at large universities, where oversubscription for needed courses is routine. Both these reasons for extended degree-completion are clearly factors of institutional performance, and should be so recognized in reporting.

Because of these many variations in student attendance patterns, meaningful reporting of persistence and degree-completion for purposes of institutional comparison demands additional contextual statistics that can help separate factors of student choice from institutional performance. At a later point, we suggest a number of such indicators as part of our recommended reporting procedures.

2. Attending Multiple Institutions. A second variation in enrollment patterns that can significantly affect the reporting of persistence and degree-completion rates is attending multiple institutions. Increasingly, students are earning credit at more than one institution in either a planned or unplanned way. Recent studies in California, for instance, suggest that almost half of those who earn a baccalaureate at a California public institution began their studies at one of the state's two-year colleges. Obviously, students who transfer credit into a given institution attain advanced standing, and can therefore be expected to earn degrees more quickly than those who do not do so. As a result, their inclusion in average time-to-completion statistics will severely skew results for institutions with large numbers of transfer students. This is a major reason why many persistence reporting systems track and report on first-time freshmen only.

At the same time, some articulated state systems of public postsecondary education have recently undertaken studies that track persistence and degree-completion for the system as a whole. Times to baccalaureate, for example, can in this manner be calculated as a whole — from initial point of enrollment at a two-year college in a transferable program to eventual completion of a baccalaureate at a four-year institution. Arguably, this kind of information provides potential "customers" with what they really need to know: "how long is it actually going to take me to complete my degree objective, no matter how many institutions in the system I end up attending?" Because they are oriented toward single-institution reporting, requirements such as "Student Right-to-Know" cannot provide this information. Taken together, these issues reinforce

the concept of separating persistence reporting for transfers and for those whose entire careers as students are spent at the same institution.

Addressing systematically the issues associated with varying patterns of student attendance is critical for meaningful reporting of information on student progress. In most cases, moreover, the clear requirement is for additional information to be reported that allows recipients to assess the degree to which reported rates are due to institutional context or are due to actual differences in institutional performance.

Some Particular Problems with Reporting Program-Level Statistics

Considerable interest in reporting student progress centers on the feasibility of producing persistence and degree-completion statistics for individual academic majors or programs of study. In addition to the variations in overall student patterns of attendance noted above, several special difficulties are associated with any attempt to track student progress by field of study. At the same time, some approximate indicators can be quickly calculated that, if interpreted cautiously, provide some useful information on major field performance.

1. Variations in Major Field Enrollments. While in principle possible, tracking student progress within identified majors is extremely difficult in practice at the undergraduate level. Particular difficulties associated with major field tracking include:

- Varying dates of program declaration. While many undergraduate students enroll for or are admitted to a particular program or major at entry as freshmen, the majority do not. Instead, they declare and are accepted by programs at some point within their first two years. Statistics on "student major" carried in most student registration data bases are therefore self-reports of the student's intent rather than actual classifications of status. Large numbers of current students, moreover, remain "undecided" until relatively late in their academic careers. Because many academic programs require no independent admission and are based on completing a defined aggregation of courses, students may

"major" without official declaration. Indeed, at some institutions it is not unknown for students to submit a degree petition and a declaration of major at the same time!

- Changing majors. Students also frequently change from one major to another in the course of an undergraduate career. Because of variations in the structure of degree program requirements, such changes are often roughly predictable (for example, students are far more likely to change from physics to sociology than the reverse), but they nevertheless occur with a great deal of variability.
- Simultaneous enrollment in more than one program. Typically encountered patterns here include "double major" (majoring in two fields at the same time), "major/minor" (enrollment in two fields simultaneously with varying and non-equivalent completion requirements in each), and sequential completion of more than one major before graduation.

2. Some Feasible but Limited Approaches. Given the above difficulties, meaningful program-level statistics on student progress are extremely difficult to generate. Two methods used in past studies, however, are worth further exploration. Both are indicative of program major performance, but both also have substantial limitations.

- A prospective method is based on initial degree field declaration. The relevant performance statistic is the proportion of a starting cohort beginning a particular program who in fact completed that (or another) program at the institution within a given time period. This method is limited as above by the difficulty of establishing a consistent point in time for program declaration. To be accurate, the time taken to earn credits counting toward the major field degree, but earned prior to program declaration, should also be taken into account. Because time of declaration is uncertain, it may be impossible to calculate time to degree, though the proportion of a starting cohort that actually earns a degree may be derived.

- A retrospective method is based on the field of the degree actually granted, regardless of whether or not the student began study in the same major field. Under this method, all students receiving degrees in a given field in a given term are identified, together with their first active terms of enrollment at the institution, and an average elapsed time calculated. While this method will easily yield time-to-degree statistics, it cannot produce graduation rate by field, because the proportion of students switching out of the major before completion is not known. Both methods have been used in past studies as indicators of programmatic effectiveness.

Overall, we conclude that systematic reporting of student progress by individual fields of study is not feasible. Certain professional, occupational, and technical fields where students are admitted directly to programs of study and tend to pursue them in isolation may be exceptions, however, and can be tracked. This includes, for example, most two-year vocational/technical programs. Fortunately, many priority programs for state and national manpower development, such as engineering, technical, health-related or other scientific fields, often fall into this category. Most experience indicates that, because of sequential curricula that require an early start on prerequisite courses, students tend to transfer out of such programs after initial declaration for more frequently than they transfer into them. As a result, prospective tracking in such programs may be feasible.

Some Problems with the Time Period Allowed for Degree Completion

Consistent reporting of degree completion rates requires a standard elapsed time period. It has become customary in student retention studies at both the institutional and state levels, for instance, to report as a summary statistic the proportion of a starting cohort completing a baccalaureate degree within five years. Some proposals for national reporting similarly suggest reporting the proportion of starters who complete within "150% of the time normally allotted for program completion." While conceptually attractive in producing a single indicator, however,

limiting completion reporting to a single benchmark such as "150% of normal" time elapsed has a number of drawbacks. Among them are:

- Varying curricular requirements among programs. As noted previously, many baccalaureate degree programs require more than the typical 120 semester credit hours (or equivalent) for completion. While it is assumed that published catalogue descriptions will be used to determine "normal" time to completion, it must be recognized that such descriptions do not always do so.
- Varying conceptions of "normal progress" for good standing. Institutions vary considerably in the maximum time limit (if any) that they place on students for earning a particular degree. While this may or may not affect national reporting standards, it may influence student perceptions of what constitutes "normal" progress. If only students who initially attend full-time are tracked (as suggested by "Student Right-to-Know"), this may be less of a problem, as such limits are primarily meant to apply to students who stop out for long periods or who enroll for extremely low credit loads.
- Inclusion of college-level coursework only. Again as noted, many students begin postsecondary study deficient in basic skills, and as a result are placed in non-collegiate coursework until such deficiencies are remediated. If terms in which exclusively non-collegiate work is taken are included in the "150% of normal" time period, institutions that enroll substantial numbers of underprepared students will show deflated comparative graduation rates — even though serving such students is their primary mission. On the other hand, not including pre-collegiate work in the reportable time period may give a distorted impression of how long underprepared students will actually require to complete degrees.

As noted, standard practice in retention reporting requires that "benchmark" statistics be calculated for degree completion within fixed time periods. Both institutional and state practice in longitudinal reporting, however, typically involve reporting at several points in time (five, six,

and seven years after starting, for example), and also report an overall average time to degree completion. Multiple statistics of this kind have proven far more informative than comparative statistics tied to a single fixed time period.

Follow-up After Completion

Though not strictly within the realm of student progress reporting, demands for information about what happens to students after leaving postsecondary education are also growing. For example, it is suggested by the "Student Right-to-Know" legislation that institutions generate postgraduate placement statistics for several purposes — both directly, in the form of job placement rates for completers, and indirectly, in order to determine if withdrawing students have continued their postsecondary studies "in programs for which the institution provided substantial preparation." Because follow-up is often undertaken in conjunction with student tracking, we believe that it is appropriate here to briefly touch upon some of its compelling methodological issues.

1. Some Unresolved Issues. While an extensive analysis of the problems encountered in conducting follow-up studies in postsecondary populations is beyond the scope of this paper, a number of issues are sufficiently important that we believe they should be raised in conjunction with reporting student progress. They include the following:

- Within what time period? Consistent reporting of both placement and re-entry into postsecondary study in "related" fields requires that a standard time limit be established as a cut-off. For entry-level job skill programs, the usual period used is one year or less. But the appropriate follow-up period is less clear for programs of study that are not explicitly intended to result in entry-level employment. Similarly, what time period should be allowed for re-enrollment in a program for which the institution provided "substantial preparation?" Again, one year seems a reasonable starting point, but in most cases earned credits will remain transferable for considerably longer.

- Should non-completers also be included? Most established institutional follow-up systems are focused on program completers only. But consistent reporting may reasonably require follow up of those who withdraw without completing a program as well. First, for many students, program completion is not a primary objective. In occupational/technical programs, the primary objective may be obtaining a job, and if this can be accomplished before the program is completed, students may cease to attend because their objectives are met. The same is true for transfer students at community colleges who intend to complete a baccalaureate elsewhere. Both these conditions suggest that both program completers and those who leave the institution without completing a program be included in any follow-up reporting effort.
- What does "related field" mean? For both post-graduate employment and re-enrollment in postsecondary study, a distinction is generally made between those who accomplish either of these activities in an area demonstrably related to their prior postsecondary field of study and those for whom this is not the case. If this distinction is to be made in standard reporting, however, consistent definitions must be developed for both the particular occupational classifications deemed "directly related" to any given field of study, and for the particular areas of postsecondary study that a given prior postsecondary program provides "substantial preparation." In the occupational areas, some work has already been accomplished in defining "related" fields for federal reporting under the Vocational Education Data System (VEDS) and federal "Track Record Disclosure" reporting. In the academic area, however, standard definitions of prior "substantial preparation" will need to be developed, perhaps guided by a study of current standards for transferable credit and articulation.
- Should a cohort or cross-sectional approach be used? Standard practice in conducting post-enrollment follow-up studies takes as its reporting base all those who complete programs (or who withdraw) within a given academic year. Under this approach,

however, the students surveyed may have begun their studies at quite different points in time. Resulting statistics are thus based on a different population than the cohort base used for calculating rates of persistence and degree-completion; placement rates obtained in this manner thus cannot be directly compared to statistics on student progress. Using a cohort methodology in conducting follow-up studies after program completion or withdrawal, however, entails additional effort in data collection; not only must the students who leave be identified, but their start date must also be determined. At the same time, assembling follow-up statistics (such as job placement rates or continuing postsecondary persistence) by cohort is difficult because information collected cross-sectionally (e.g., a survey of last year's graduates) must be re-allocated across a number of starting cohorts on a case-by-case basis. In general, it must be expected that most institutions will continue to use a cross-sectional approach to post-enrollment follow-up, and appropriate standard reporting procedures should be designed with this likelihood in mind.

2. Possible Methods for Follow-up. The primary approach used by colleges and universities to determine rates of job placement and further postsecondary study is based upon mailed surveys. Alternatively, some institutions conduct telephone surveys. Although some institutions have obtained usable data from this method, response rates to both kinds of surveys are often disappointing, and can result in highly unreliable information.

If standard statistics are to be meaningfully generated, acceptable parameters for response rates should be established. In some existing cases (for example, in the program review processes of community college occupational/technical programs in Florida and Maryland), response rates are reported together with the statistics themselves. This approach allows "consumers" of the report the opportunity to roughly gauge the reliability of obtained placement and postsecondary persistence rates. An alternative is to establish a minimum standard response

rate for reporting. Experiences with such studies, for example, suggests that response rates of below 25% are unlikely to yield reliable information.

Actively exploring alternatives to survey-based follow-up reporting may also prove fruitful. Re-enrollment in another postsecondary program after program completion or withdrawal, for instance, is easily determined electronically in states that maintain a unit-record database that includes information drawn from all public colleges and universities. As noted above, nearly 40 states currently maintain or are developing such systems, and they have been used in at least 10 states to produce reliable statistics on interinstitutional transfer and graduation rates. A drawback of such systems, of course, is that they do not contain records drawn from private institutions. Another emerging approach is the "electronic transcript" now being developed by several college and university consortia. Under this method, enrollment and performance data can be transmitted from one institution to another in machine-readable form. This method is also being explored as an alternative to surveys for collecting more complete information about post-enrollment activities and performance.

In the realm of job placement, similar alternatives appear promising and are being explored. In Florida, for example, statistics on current employment in field and average earnings can be automatically calculated for both program completers and non-completers by matching college records electronically with statewide employment records. Similar projects are now under way in Colorado, Texas, Oregon and Washington. This approach appears capable of generating employment statistics on over three-quarters of an identified postsecondary population, compared with the often less than a third who complete a follow-up survey

Again, full discussion of post-completion follow-up is outside the scope of this paper. A comprehensive approach to reporting institutional performance, however, demands such information, and student progress reporting should be designed to conform as fully as possible to the eventual need for such reporting.

IV. Some Recommendations for a Basic Reporting System

Given the complexity of the issues noted above, many resolutions are possible. In this section, we present for discussion one set of possible directions. In developing these recommendations, we have attempted as fully as possible to follow the principles noted earlier. Any approach to student progress reporting must serve multiple constituencies (federal, state and institutional), must be sufficiently flexible that it can be implemented in many technical and academic contexts, and must be simple enough that meaningful information can be produced by all institutions. Our intent here is to provide a concrete starting point for future discussions, not to advance a set of definitive solutions. But we firmly believe that a concrete template is needed with respect to methodologies, data elements, and reportable statistics if fruitful further discussion is to proceed.

Our recommendations are presented in three parts. First, we advance some broad methodological procedures with respect to cohort construction and analysis. Secondly, we suggest a number of standard reporting statistics and how they might be calculated and interpreted. Finally, we propose a minimal base dataset to produce the required statistics, and point out the areas where additional data element definition will be needed.

Recommended Procedures for Cohort-Building and Analysis

As noted, both institutions and state systems have in the past used many approaches in reporting student progress. Variations occur with respect to how longitudinal tracking cohorts are built, who is to be included in such tracking, and how these data are to be reported and analyzed. Our recommendations in this arena are presented below.

1. A Cohort-Based Methodology Based on Start Date at a Given Institution. We recommend that any comprehensive system be founded on establishing entering cohorts on an institution-by-institution basis. While states may find it useful to occasionally establish and track entering cohorts for a public higher education system as a whole (for example, in examining

patterns of interinstitutional transfer), and the federal government may find it useful to continue looking at overall collegiate completion rates through such national cohort studies as the National Longitudinal Study and High School and Beyond, the primary focus of attention for comprehensive student progress reporting should be the individual institution. This requires that longitudinal cohorts be established for each postsecondary institution. We strongly believe that the resulting management information will be as useful to institutional decisionmakers as it is for providing external consumer information or accountability. As a result, a major intent required of progress reporting design should be to encourage and support "best practice" in constructing and using longitudinal data systems at the institutional level.

We must emphasize that this recommendation should in no way discourage states and systems from adopting a collective, comprehensive approach to reporting progress. Important efficiencies in institutional cohort tracking, for example, can be achieved through use of a centralized unit-record system. In such cases, the software and procedures needed to create and update tracking cohorts can be standardized, and the resulting files shared with institutions; at the same time, unit-record arrangements provide the system with the capability to easily conduct articulation studies of interest to each institution. States can also play an important technical assistance role in helping institutions to build the required local tracking capability. In Texas and Hawaii, for example, institutional tracking systems were developed in common for the state's two-year colleges under a consortia arrangement funded and coordinated through a state system office.

We further recommend that starting cohorts be established for each fall term, and should include all incoming students who first register for credit at the institution in the fall term of the academic year. While some institutions may choose to establish starting cohorts for terms other than fall, academic calendars vary sufficiently that uniform reporting of cohort statistics is impossible. At the same time, standard fall term reporting is already established at both the state and federal levels, and existing definitions and inclusion procedures for IPEDS and similar

systems can be followed. We recommend against establishing starting cohorts that include all students entering the institution in a given academic year, regardless of term, on the grounds of excessive complexity. Most institutions maintain data on a term-by-term basis, and aggregating starters across terms can be technically difficult. At the same time, the resulting statistics (particularly persistence statistics) are less useful locally than are term-based statistics. We recognize that this recommendation means that not all starting students will be tracked, and that student progress statistics will as a result be "incomplete." But we believe in this case that procedural simplicity and the utility and interpretability of the resulting information outweigh exhaustiveness.

We additionally suggest the possibility of including prior summer starters in each fall cohort. Students are often admitted for a given fall term, but physically attend the institution for the first time in the summer before. Moreover, summer starters often contain populations of particular interest for tracking, including athletes and students with assessed basic skills deficiencies who require remediation. We emphasize, however, that new definitions are needed that unambiguously specify if all, or a subset, of prior summer starters should be included in a standard fall tracking cohort.

2. Include Matriculated Degree-Seekers Only. Because a primary intent of student progress reporting is to determine comparative rates of degree-completion, we recommend that only degree-seeking students be included. All types of degree-seekers should be initially distinguished (e.g., associate vs. baccalaureate degrees) according the "catalogue time" required for their completion. This recommendation is consistent with but broader than the inclusion criteria of the "Student Right-to-Know" legislation, which specifies a further limitation of full-time students. We believe that meaningful local tracking systems must include all students regardless of initial credit load, and full-time students can be easily isolated for special analysis and reporting if all starting degree-seekers are initially identified and included in the cohort. Including all starting

degree-seekers, moreover, obviates the difficulty of uneven full-time attendance; any subset of students, regardless of enrollment pattern, can be tracked.

We further recommend that cohort assignment should wherever possible be based upon the point at which a student first began earning credit toward a degree. Behavioral cohorts containing all types of students are more useful to institutions than more exclusive approaches, and "matriculated" students can be flagged and isolated for reporting in a longitudinal data base. The main reason for this recommendation is that students may begin earning credit toward a particular degree long before they officially declare a degree intention. We suggest two potential ways to deal with this situation. First, an earned-credit limit might be established, beyond which students are considered behaviorally to be "degree-seeking," regardless of declaration. The Texas Academic Skills Program (TASP), for example, requires students to be assessed for basic skills as "degree-seeking" if they have amassed fifteen or more credits of degree-related work. Alternatively, students might be assigned directly to the cohort that corresponds to the term in which they first enrolled for a course that can be applied toward a degree. The first approach would increase degree-completion rates by eliminating legitimate (but undeclared) degree-seekers who drop out in their first few terms; the second would artificially decrease degree-completion by including students who registered for degree-credit courses who have little or no intention of actually completing a degree.

3. Term Tracking and Fall Reporting We recommend that all academic activity be recorded and tracked on a term-by-term basis at each institution, but that standard persistence and completion reporting be established on the basis of fall term "snapshots" only. This recommendation simultaneously recognizes the utility and simplicity of term-based methods at the institutional level and the fact that variations in academic calendars render common term-based reporting impossible. We believe that institutions would be ill-served by developing a specialized tracking system to meet the exclusive need of federal reporting. At the same time,

fall term snapshots of cohort progress provide the only feasible method for comparing performance across institutions on a consistent basis.

We further recommend that the tracking period not be artificially constrained to "150% of the normal time period" required for degree completion. While "Student Right-to-Know" suggests reporting statistics on this basis, we believe that institutions are not well served by artificially cutting off the tracking period because external reporting does not require statistics beyond six years. Reporting requirements should include both an average time to degree completion and, if feasible, degree completion rates for multiple elapsed time periods (for instance five, six and seven years after initial matriculation). We believe that this more flexible approach will both foster better institutional use of the resulting information and will provide better "consumer information" than a performance statistic collected at a single point in time.

4. Distinguish First-time Freshmen from New Transfers. To minimally resolve the difficulties of prior credit discussed in the previous section, we recommend, a) that new freshmen and new transfers who enter the institution in the same term should be included in the same starting cohort, and b) that all progress reporting statistics for these two groups should be compiled and presented separately. The reasons for these recommendations are several. First, effective management requires information about the enrollment patterns of both freshman and new transfer populations; for many institutions, transfers constitute over half the incoming student body each term. Secondly, we recognize that best practice at the institutional level requires constructing actual behavioral cohorts rather than assigning incoming transfers to the cohort that corresponds to their expected "graduating class"; only a behavioral approach will accurately reflect what is actually happening at a given institution. Finally, we do not believe that an appropriate method can be devised to meaningfully aggregate statistics across transfer and new freshmen populations or indeed, across new transfer students who bring with them varying amounts of transfer credit. Assigning new transfers to an appropriate "starting class" based on

the amount of credit transferred will distort the fact that incoming transfers may have taken varying amounts of time to amass these credits, as have the freshmen starters with whom they are grouped. At the same time, producing "bottom line" degree completion statistics for a behavioral cohort as a whole will artificially decrease times to completion by mixing together the shorter average times required by transfer students to complete their degrees.

For similar reasons, we recommend separate reporting lines for categories of new transfers, broken down by the number of credits successfully transferred or the class standing awarded to the student on initial entry (e.g., sophomore, junior, etc.). If numbers of transfer credits are used, these should be translated into academic year equivalents at the receiving institution (e.g., students transferring one year of degree credit or less, two years of degree credit, etc.). Again, the reason for this recommendation is to allow inclusion of all entering students with their actual starting cohorts without producing misleading persistence and degree-completion statistics for the cohort as a whole. At the same time, we believe that separate reporting will yield better consumer information for potential students because incoming transfers can more precisely assess the institution's past performance for students transferring similar numbers of credits.

5. Report Students Who Persist at Another Institution Separately. We recommend that all statistics on persistence and degree-completion be compiled on the basis of enrollment at a single institution. This is consistent with current practice in student tracking at most colleges and universities and yields straightforward easily-interpretable statistics. This recommendation is at variance with current practice in reporting the persistence of student athletes under NCAA guidelines, and with proposed reporting under "Student Right-to-Know." In both latter cases, students are to be counted as "persisting" or are removed from the denominator in the calculation of degree-completion statistics if they withdraw from the institution in good standing or if they withdraw and can subsequently be shown to have re-enrolled in another postsecondary institution for which the institution from which they have withdrawn provided "substantial preparation."

We make this recommendation for two reasons. First, we believe that removing students from an initial starting cohort for any reason will decrease the value of the information produced for institutional decisionmaking, and at the same time will yield information of questionable value in informing student choice. Second, we wish to caution against combining in the same performance statistic information of quite different kinds — institutional persistence, and transfer in good standing to another institution — drawn from quite different sources. Persistence at a given institution, in the main, can be fairly reported because the institution itself has control over the needed data bases. This is not the case for follow-up reporting, which is generally accomplished through questionnaire-based methodologies, which often experience difficulties in obtaining an adequate response rate. A single statistic based on this combination may as easily represent differential response rates among institutions as it will signify real differences in institutional performance.

Instead we recommend that known rates of transfer to other institutions be reported separately from institutional persistence and degree-completion rates. The latter should be calculated on a denominator base of the cohort as a whole, while the former can be appropriately calculated on the same base or alternatively as a percentage of those withdrawing in good standing. Whichever alternative is used, response rates should also be reported so that users of the information can make an independent assessment of its reliability.

Proposed Standard Reporting Statistics

In order to provide both a meaningful picture of student progress nationally and a basis for appropriately comparing persistence and degree-completion across institutions, we believe that a range of standard performance statistics is required. Some, as noted, are the kinds of outcomes statistics called for by "Student Right-to-Know." Others, equally important, provide additional information about institutional context which will allow consumers of the information to determine how much of the variance in reported progress is due to the kinds of students served

and how much is due to real differences in institutional performance. Recommended standard reporting statistics are presented below.

1. Persistence Indicators. Persistence indicators report the proportion of each starting cohort remaining enrolled within a given reporting time period. In general, "persistence" is defined operationally as attempting at least one credit during the time period reported — term or academic year. Within this broad category, we suggest compiling four performance statistics:

- Percent enrolled at "normal" progress. This statistic represents the proportion of the total starting cohort actively enrolled for credit during the reporting period who have completed at least 30 student semester credit hours (SCH) or equivalent during the academic year. In essence, "normal" progress represents a credit-earning rate that would, if continued, result in degree-completion within the time period designated in the college catalogue.
- Percent enrolled, but not at "normal" progress. This statistic represents the proportion of the total starting cohort actively enrolled, but not meeting the definition of "normal" progress above.
- Percent enrolled in good standing. This statistic represents the proportion of the total starting cohort actively enrolled for credit during the reporting period who are in good academic standing. Normally, this requires maintaining a minimum grade-point of 2.5 or above, though institutional definitions will be used.
- Percent enrolled not in good standing. This statistic represents the proportion of the total starting cohort enrolled for credit within the reporting period who do not meet the definition of "good standing" above. Note that this may include students on probation for academic, disciplinary, or fiscal reasons.

Persistence indicators should be calculated and reported for multiple reporting periods within (and beyond) the "150% of normal" time to completion specified by the "Student Right-to-Know" legislation. For baccalaureate degree-seekers, reporting periods of four,

five, six, and seven or more years are suggested. For associate degree-seekers, reporting periods of two through at least six years are appropriate.

2. Degree-Completion Indicators. Degree-completion indicators report the proportion of a starting cohort successfully completing a program of study within a designated time period. In general, completion is defined as the formal award of a degree or certificate. Occasionally, however, "completion" has been defined operationally as completing all requirements for a given degree, even though it is not formally conferred — an outcome frequently encountered in two-year academic transfer programs. Given this condition, we suggest three main indicators:

- Percent completing programs. This statistic represents the cumulative proportion of the starting cohort completing programs across all terms prior to the point in time at which the statistic is calculated. Consistent with the recommended persistence indicators above, we suggest that degree-completion statistics be calculated and reported for multiple reporting periods within (and beyond) the "150% of normal" time to completion. Also as above, separate reporting of two-year and four-year degrees is appropriate.
- Average time to degree-completion. This statistic represents the average elapsed time required for members of the cohort to complete their programs. In both informing "consumers" and institutional planning, it is a useful complement to percent completing because it provides a concrete estimate of the expected time commitment needed. Unlike percent completed within a given time period, moreover, it can reflect data drawn from all degree-completers — not merely those who complete within the "150% of normal" time-to-completion window.
- Percent of required credits completed at graduation. This is a contextual statistic intended to reflect the "efficiency" with which students complete their programs. Increasingly, students are completing more than the number of credits required in their programs. Reasons include: (a) the unavailability of required courses and the need to

maintain full loads for financial aid or other reasons, and (b) the consequences of changing programs and consequently having to take additional required but unplanned coursework in a new major field.

3. Contextual Indicators. Contextual indicators are intended to provide additional information about student enrollment behavior that can be used to better interpret the student performance statistics described above. They are particularly important in allowing users of the information to determine the extent to which observed outcomes are a function of actual institutional performance or of the predominant clientele served by the institution. Two such statistics are recommended, each of which reflects a different kind of attendance pattern.

- Percent attempting "normal" progress. This statistic represents the proportion of the starting cohort that enrolls for at least the number of credits each term that, if completed, would result in completing the degree sought within the "normal" time expected. It is defined operationally by the current standing of the student with respect to degree-completion and the credit loads attempted by the student during the terms covered by a given reporting period. Its primary utility is to allow users of the performance indicators above to assess the extent to which long times to completion are largely due to part-time attendance at the institution in question.
- Percent attending "continuously." This statistic represents the proportion of the starting cohort that has enrolled at the institution for contiguous regular terms of attendance, excluding summers, across all terms of a given reporting period. It is defined operationally in terms of the proportion of students who enroll for at least one credit in all terms (excluding summers) up to and including the term corresponding to the point in time at which the statistic is calculated. Its primary utility is to allow users of the performance indicators above to assess the extent to which long times of completion are largely due to "stop out" behavior at the institution in question.

Because of the distinctive missions and clienteles typical of different types of postsecondary institutions, quite different rates of persistence and degree-completion can be expected regardless of how well a particular institution performs. As a result, we additionally recommend that baseline expectations with regard to both persistence and degree-completion be established and noted for different types of institutions, based on available national datasets that contain consistent information on postsecondary persistence and success for a representative cross-section of the population. The data are of sufficient reliability to establish average cohort rates of persistence and degree-completion by postsecondary sector. Once established, such baseline performance expectations might be used as an average performance standard against which to more appropriately compare the performance of any given institution.

A Proposed Base Dataset

Most of the above performance statistics are calculated from one or more base data elements that must be collected and maintained according to standard national definitions. In many cases, such definitions already exist but in many cases they do not. Considerable work will be required to develop such definitions as current institutional practices vary widely.

Our recommendations for a minimal tracking dataset are presented in Chart 2 and are briefly discussed below. In choosing data elements to be included, we followed three basic principles: (a) that the data element was required for anticipated national reporting such as in "Student Right-to-Know;" (b) that the data element is generally included in existing state and institutional tracking data bases; and (c) that the data element is generally defined and maintained in existing student records systems regardless of the type of institution. As with all other proposals in this paper, we intend this list not as definitive, but as a starting point for discussion. Most institutions can and do maintain far more data elements when they elect to establish a local longitudinal tracking capability. National reporting should in no way inhibit this practice.

Chart 2

RECOMMENDED DATA ELEMENTS FOR BASE DATASET

Initial Descriptors:

1. Demographic elements
   - Sex*
   - Race*
   - Age at entry*
   - Citizenship*

2. Enrollment status elements
   - First term of academic history (for cohort definition)*
   - Admission status*
     - Regular (unrestricted)
     - Provisional/admissions exception
   - Degree intended*
     - Associate degree (2-year)
     - Baccalaureate degree (4-year)
   - Entering type*
     - First-time freshman
     - Transfer (with <30 SCH; 30-60 SCH; 60-90 SCH; and > 90 SCH transfer credit or equivalent)

3. Matriculation status

4. Athletic status elements
   - Recruited as athlete*
     - By sport
     - By scholarship

Term Tracking Elements:

1. Enrollment/completion
   - Current class level (e.g., "freshman")*
   - Academic standing*
     - Good standing
     - Probation
     - Suspension (academic)
     - Suspension (other)
   - SCH (or equivalent) degree credits enrolled for by term*
   - SCH (or equivalent) degree credits earned by term*
   - Degrees granted*
     - By type (associate vs. baccalaureate)
     - By field of study

2. Athletic activity
   - Participation (by sport)*
   - Scholarship received (by sport)*

*Indicates standard definition currently exists

1. Initial descriptors. Initial descriptors should be collected and frozen at the point a student enters a cohort. Their primary utility is to allow aggregate institutional performance statistics to be broken down by specific populations of interest. Consistent with the population reporting requirements of "Student Right-to-Know" and with current good practice in student tracking, we suggest maintaining initial descriptors of the following types:

- Demographics. The four elements proposed are commonly used as student population descriptors and all are currently governed by existing state and federal reporting definitions.
- Enrollment status. These elements describe key aspects of initial enrollment at the institution that may markedly affect future persistence and performance. Proposed elements here are included for different reasons. Admissions status (unrestricted and exceptional) is included because large numbers of admissions exceptions in a given cohort may markedly influence later performance; we do not advocate excluding such students from the cohort but they should be separately reportable. Degree intent and entering student type (first-time vs. transfer) are intended as mandatory separate lines for reporting all performance statistics as above. Degree intent will both determine cohort membership and will provide the basis for assessing "150% of normal" in calculating completion. Separate reporting of transfers and first-time freshmen (as well as breaking down transfer population reporting by the amount of prior transfer credit earned in academic year equivalents) allows fair comparisons in performance to be made across institutions with different incoming ratios between transfers and first-time students. Virtually all these elements are already fully or partially defined at the national level. Important exceptions are admissions status and proposed distinctions among entering transfers. An additional problem, as noted above, is degree declaration. On the one hand, students may not declare a degree until substantial numbers of credits have already

been accrued, and thus not be included in an initial "degree-seeking" cohort. On the other hand, students may "declare" a degree for reasons of administrative convenience with no real intention of completing one.

- Athletic status. A major intent of "Student Right-to-Know" is separate reporting of student progress for student athletes, broken down by sport. Standard federal definitions do not currently exist here, though athletic association guidelines are available as a model.

2. Term tracking data elements. Term tracking data elements provide the raw materials for constructing all proposed performance statistics. They are extracted from existing records for each term of enrollment across the defined tracking period. Consistent with the discussion above, they should be collected in a manner that corresponds to the established academic calendar and its associated term structure; necessarily, this means that some institutions or state systems will be extracting three terms of data while others may extract four or more each academic year. But regardless of academic calendar, term data elements should be collected in a manner that allows consistent aggregation into a standard academic year. We do not anticipate major difficulty with this concept, as it is already the method used in federal IPEDS reporting, for example, degrees completed by field.

Term tracking data elements recommended for the base data set include:

- Degree credits enrolled for and earned. These are best compiled according to existing academic credit-record procedures — quarter hours, semester credit hours, courses, etc. — so long as they can be converted to a single standard across an academic year. Credits enrolled for are used to determine "persistence" each term and to calculate average load or other contextual statistics that might indicate less than full-time continuous enrollment. No national standard currently exists for reporting credits. But because only persistence will be recorded using this data element as a base, established

procedures for determining whether or not a student is "enrolled" at census (such as used in IPEDS) can be followed here.

- Degree earned. This element indicates whether a degree or certificate is earned during a particular term of enrollment and is used to mark "completion" for performance reporting. The element should at minimum distinguish among types of degrees that require different "normal" times to completion. Ideally, the type and field of the degree award should also be recorded. Degree awards should in this case follow established federal reporting definitions for level and field of study.
- Academic standing. This element provides contextual information on student performance, and is generally reflective of a minimum maintained grade-point-average. Proposed categories, would include good standing, probation, academic suspension, and suspension for other reasons (e.g., disciplinary). No common federal definitions of this element exist currently. Because of wide variations among institutional procedures in awarding and recording grades, no common grade-performance reporting is recommended. But institutions are strongly encouraged to maintain GPA as a term tracking element for their own purposes.
- Current class equivalent level. This element indicates the current class standing of the student (e.g., freshman, sophomore, junior, or senior). In principle, this should be equivalent to a known number of credits earned, but current procedures differ in this respect. Consequently, this element is recommended as an additional means to indicate the rate of a given student's progress toward a degree. Because federal definitions regarding class level are available, this data element might be used as an alternative to developing standard credit equivalents to roughly indicate the proportion of a given student's program that has been completed.
- Athletic activity. For some reporting purposes, term records of student athletic participation may be needed by sport; in addition, because students may stop receiving

athletic scholarship support during their period of enrollment, tracking data on scholarship support may be appropriate for inclusion. Federal data reporting definitions do not currently exist in this area.

V. Uses of the Resulting Data

Information on student persistence and performance has been used for a variety of purposes at the state and institutional levels. Indeed, as might be expected, different intended uses have led to the construction of quite different longitudinal databases. While it is beyond the scope of this paper to review institutional uses of such data, its ready availability based upon standard definitions at the state and national levels suggest a number of potential applications. The purpose of this section is to briefly review these potential state and federal uses, place some important caveats upon them, and to suggest a process for moving forward.

Some Possible Applications

While information on comparative institutional performance has not been readily available, experience suggests several broad uses for information of this kind. They include the following:

1. To determine institutional "eligibility." Performance information may first be used to help determine if institutions can qualify to receive funds or to otherwise participate in a range of state or federal programs. At the federal level, for example, compliance with the disclosure provisions of the "Student Right-to-Know" legislation will likely be linked with eligibility to receive federal financial aid funds and with eligibility for other Title IV federal categorical programs. At the state level, such linkages have already occurred with a number of assessment initiatives. In Virginia, for example, institutional compliance with state assessment guidelines is linked to eligibility to participate in a range of addition-to-base incentive programs. At both levels, it is important to stress, eligibility is tied to procedural compliance, not to the actual levels of performance reported and achieved.

A different kind of "eligibility" is provided by institutional accreditation. All six regional accrediting bodies, for example, now require some demonstration of institutional effectiveness through demonstrated outcomes. Currently, this demonstration can be accomplished as the institution sees fit — using a range of procedures and measures. The existence of national data standards on student progress and completion, however, may result in accrediting agencies requesting all institutions to report such data as a standard part of self-study — much as basic institutional enrollment profile data is currently requested.

2. To assist in resource allocation decisionmaking. Information on comparative institutional performance can also be used directly to help make resource allocation decisions. In several states, for example, such information is used in addition-to-base marginal incentive grant programs or to directly reward performance. These cases are, however, of two quite different kinds. First, exemplary performance can be differentially rewarded with the hope that it will encourage more of the same. Tennessee's "performance funding" approach is the most visible example of this approach, with levels of additional award linked directly to levels of indicated performance on a range of outcome measures. In Florida's two-year colleges, moreover, institutions must demonstrate minimum levels of job placement in related fields in order to continue offering the program.

A different approach is to use institutional performance information to more broadly guide marginal investments of resources. In New Jersey, for example, one intent of the State Unit Record Enrollment (SURE) System and a common collegiate test of "general intellectual skills" is to help determine where available marginal resources should most effectively be placed. Under this approach, and in contrast to performance funding, deficiencies in performance may result in additional investments to improve performance — particularly if the performance area is critical to attaining state goals. A good example here is the goal of increasing minority persistence and graduation by directing efforts toward those areas and institutions that show lower-than-average performance.

3. To provide "consumer" information. Disclosing information on comparative institutional performance can potentially also provide an additional foundation for student choice regarding which of several available postsecondary institutions to attend. This is the major premise, of course, of such initiatives as "Student Right-to-Know," and the several versions of "Track Record Disclosure" reporting requirements intended to apply to federally-funded occupational/technical programs. The premise of such reporting is that potential students can better estimate their personal "return on investment" should they choose to enroll in a given program. "Consumer information" requirements of this kind have also been occasionally proposed and enacted at the state level. A recent accountability proposal for California's community colleges, for instance, is the ability to report to potential students the likelihood that they will graduate from a given program and the time that it will probably take them.

All three of these classes of utilization are, of course, in addition to the more general utility of longitudinal data bases for planning, management, and evaluation at the institutional and state system level. Most institutions that have developed such systems, for example, do so to help improve student retention programs, to project and analyze patterns of enrollment for resource planning, or to help evaluate particular academic programs. Parallel uses at the state system level include investigating academic progress for particular student constituencies (especially minorities or other traditionally underserved populations), assessing the statewide training "pipeline" for critical occupations, or evaluating the effectiveness of articulation and transfer arrangements among systems of institutions.

Some Directives Regarding Data Use

The use of performance indicators at any level of decisionmaking in postsecondary education, past experience has shown, is a tricky business. This may particularly be the case if commonly defined performance statistics on student persistence and degree-completion are available and are routinely used in "high stakes" decisions. In developing an appropriate approach, therefore, it

is essential to concentrate on compiling data that can be used to guide meaningful improvement, rather than on creating a statistical reporting system that may subtly redefine what is perceived as important. In this regard, both states and institutions should strive toward the development of reporting systems that:

- Encourage managing resources in ways that address real problems rather than toward maximizing indicators. This phenomenon, of course, is inherent in all indicator systems — particularly those that rely on calculations that are relatively far removed from the base data from which they are calculated. Given the complexity of cohort-based methodologies, considerable variations in standard performance statistics can be the result of relatively small changes in methodology or base data definition. As the recent experience of K-12 testing has demonstrated, improving test score performance itself can become the paramount management concern if high payoffs are associated directly with results. An obvious manifestation in the case of completion-rate reporting in higher education, for instance, may be a proliferation of additional "credentials" for attendance periods less than traditional degree requirements.
- Maintain academic standards. One way to achieve higher rates of graduation is to place fewer academic barriers in the path of students on their way to a degree. This is exemplary if the barriers are unnecessary to real achievement — for example, requiring students to take courses or pass examinations that are not related to or are not predictive of future performance. But it is a problem if "barriers" represent real performance standards which students ought to be able to achieve if an awarded degree is to retain its integrity. If payoffs for institutions to achieve high rates of degree-completion are high, one result may be to relax academic standards of progress.
- Maintain needed access to higher education. An opposite strategy for achieving higher rates of graduation is to limit admission to those types of students likely to achieve at higher rates. At present, for example, the missions of many public institutions

emphasize open access — with the associated understanding that educating the open-access student may require greater investments of time and resources than those required for high ability students. If these differences in mission are not otherwise recognized in a system of performance indicators, pressure will be strong for "low-performance" institutions to begin examining the kinds of students they admit.

- Keep implementation costs in line. As noted earlier, current institutional capacity to report student persistence and degree-completion on a cohort basis is limited. In order to develop an adequate reporting capability, most institutions will need to reconfigure present student records data bases, and to invest additional staff time to creating, updating, and manipulating longitudinal files. While far from prohibitive, experience has indicated that the costs associated with these activities are also significant. Local benefits of the associated information, we believe, are considerable and certainly a growing number of institutions have been willing to invest in a longitudinal tracking capability on its own merits. But policy makers should be aware of the fact that considerable investment will be required if most are expected to produce the kinds of performance statistics recommended above.
- Provide contextual information that allows users to draw better conclusions about the factors responsible for apparent variations in performance. A major constraint on any indicator system is its very simplicity. Considerable research and experience has demonstrated that student progress is a complex, multi-causal phenomenon. Similar rates of persistence and degree-completion, for example, may be due to quite different interactions between student and environmental characteristics. As a result, a "high" rate for a two-year college serving a non-traditional student population may be an unusually low one for a residential four-year college with selective admission standards. Under such circumstances, an indicator system must place a high premium upon contextual statistics that allow users to determine appropriate or expected performance.

Even with contextual information, however, the likelihood is considerable that differences observed in institutional performances will be misattributed.

- Encourage the development of best practice at the institutional level. Experience in many fields has amply demonstrated the proposition that national standards may be radically at odds with local informational utility. Consequently, we have taken special care this paper to recommend data definitions and calculation procedures that can simultaneously serve national, state, and institutional needs. If multi-purpose reporting systems are not developed, we argue, the consequences will be more than simple loss of efficiency. If institutions do not use the resulting information on a daily basis, they have little incentive to ensure that it is accurate. At the same time, those who do not possess a local tracking capability will not be encouraged to develop one beyond the minimal limits imposed by federal or state reporting. Both these difficulties represent potential dangers, and each should be carefully monitored throughout the process of developing appropriate data collection, reporting, and utilization procedures.

VI. What's Needed Next?

The intent of this paper is to raise issues, not propose conclusions. Because we believe that the most productive discussions revolve around concrete proposals, we have developed some specific recommendations regarding the actual construction and content of minimal longitudinal data files and have proposed a minimum set of standard performance statistics that we believe will meet the needs of national, state, and institutional constituencies. In order to further this discussion, however, we strongly recommend that proposed reporting statistics and their underlying data definitions be formally discussed by appropriate professional bodies in four areas:

- Potential governmental users, such as the National Center for Education Statistics (NCES) and state coordinating boards.
- Professional bodies representing those in institutions of higher education who are responsible for data collection, maintenance and reporting; at minimum, this includes

the Association for Institutional Research (AIR) and the American Association of Collegiate Registrars and Admissions Officers (AACRAO).

- Associations representing the various institutional sectors of postsecondary education, to determine the particular problems in performance reporting and data interpretation associated with their respective types of institutions; at minimum, this would include, the National Association of State Universities and Land Grant Colleges (NASULGC), the American Association of State Colleges and Universities (AASCU), the American Association of Community and Junior Colleges (AACJC), and the Council of Independent Colleges (CIC).
- Associations representing special interests in reporting student progress, such as the National Collegiate Athletic Association (NCAA).

We also recommend that examples of "best practice" in longitudinal student tracking data base construction and use be documented as a guide for further development at both the state and the institutional levels. At the state level, these should include approaches based on the existence of a unit-record data base as well as those based on common procedural guidelines for institutional reporting. At the institutional level, examples should be documented from a range of institutional types — including public community colleges, public and private four-year colleges and universities, and proprietary institutions — of varying sizes and levels of organizational complexity. In addition, at the institutional level, approaches should be documented that range in technical sophistication and in the required computing and analytical capacity.

Developing consistent approaches to reporting student progress, we believe, is in the interest of institutions, states, potential consumers, and the nation as a whole. But no one is served by statistics that are misleading, or by procedures that cannot be meaningfully complied with. The proposals contained in this paper, we feel, are workable and appropriate. We urge that they be used as a starting point for a national dialogue.

REFERENCES

Adelman, Stanley I.; Ewell, Peter T.; and Grable, John R. "LONESTAR: Texas's Voluntary Tracking and Developmental Evaluation System: in T. Bers (ed.), Using Student Tracking Systems Effectively, New Directions for Community Colleges No. 66, Summer, 1989, pp. 75-82.

Education Commission of the States (ECS) and State Higher Education Executive Officers (SHEEO). New Issues, New Roles: A Conversation with State Higher Education Executive Officers. Denver, Colo.: ECS/SHEEO, 1989.

Ewell, Peter T. Assessment and the "New Accountability": A Challenge for Higher Education's Leadership. Denver, Colo.: Education Commission of the States, 1990.

Ewell, Peter T.; Parker, Ronald; and Jones, Dennis P. Establishing a Longitudinal Student Tracking System: An Implementation Handbook. Boulder, Colo.: NCHEMS, 1988.

Hanson, David C. "Federal Disclosure Regulations: The "Worst Case" Scenario for Outcomes Assessment." In AAHE Bulletin No. 42, 1990, pp. 9-10.

State Higher Education Executive Officers (SHEEO). State Capabilities to Report Graduation Rates and Related Postsecondary Student Outcomes. Denver, Colo.: SHEEO, 1991.

Wing, Paul. Higher Education Enrollment Forecasting: A Manual for State-Level Agencies. Boulder, Colo.: NCHEMS, 1974.